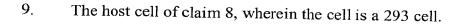
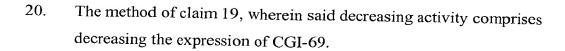


- 1. An isolated CGI-69 nucleic acid comprising:
 - (a) a nucleic acid sequence comprising at least 80% identity with SEQ ID NO:1, excluding the CGI-69 nucleic acid having the sequence of SEQ ID NO:2; or
 - (b) a complement of the nucleic acid sequence of (a).
- 2. The isolated CGI-69 nucleic acid of claim 1 comprising:
 - (a) a nucleic acid sequence comprising at least 80% identity with a fragment of SEQ ID NO:1 consisting of nucleotide 14 to nucleotide 1093, excluding the CGI-69 nucleic acid having the sequence of SEQ ID NO:2 consisting of nucleotide 118 to nucleotide 1173; or
 - (b) a complement of the nucleic acid sequence of (a).
- 3. The isolated CGI-69 nucleic acid of claim 1, wherein the nucleic acid sequence encodes a polypeptide comprising at least 80% identity with the polypeptide of SEQ ID NO:3, excluding the polypeptide of SEQ ID NO:4, wherein the polypeptide comprises at least one biological activity of the polypeptide of SEQ ID NO:3.
- 4. The isolated CGI-69 nucleic acid of claim 3, wherein biological activity comprises mitochondrial localization.
- 5. A vector comprising the isolated CGI-69 nucleic acid of claim 1.
- 6. The vector of claim 5, wherein the vector is an expression vector comprising the CGI-69 nucleic acid of claim 1 operably linked to a promoter.
- 7. The vector of claim 6, wherein the promoter is recognized by a mammalian cell transformed with the vector.
- 8. A host cell comprising the vector of claim 5.



- 10. An isolated CGI-69 polypeptide comprising an amino acid sequence having at least 80% sequence identity to the sequence of SEQ ID NO:3, excluding the CGI-69 polypeptide having the sequence of SEQ ID NO:4.
- 11. The isolated CGI-69 polypeptide of claim 10, wherein said polypeptide is a biologically active CGI-69 polypeptide.
- 12. The isolated CGI-69 polypeptide of claim 10, wherein said amino acid sequence has at least 90% sequence identity to the sequence of SEQ ID NOS:3.
- 13. A CGI-69 fusion protein comprising a polypeptide fused to the carboxy-terminus of a polypeptide comprising an amino acid sequence having at least 80% sequence identity to the sequence of SEQ ID NO:3.
- 14. The CGI-69 fusion polypeptide of claim 13, wherein the fusion protein acts as an uncoupling protein.
- 15. The CGI-69 fusion polypeptide of claim 14, wherein the polypeptide fused to the carboxy-terminus is negatively charged.
- 16. The CGI-69 fusion polypeptide of claim 14, wherein the polypeptide fused to the carboxy-terminus comprises the sequence of SEQ ID NO:17.
- 17. An antibody that specifically binds to the polypeptide of claim 10.
- 18. A method of treating a metabolic disorder comprising modulating the activity of CGI-69.
- 19. The method of claim 18, wherein said modulating activity of CGI-69 comprises decreasing the activity of CGI-69.



- 21. The method of claim 20, wherein said metabolic disorder is selected from the group consisting of cachexia, tumors, cancers, viral infections and bacterial infections.
- 22. The method of claim 18, wherein said modulating activity of CGI-69 comprises increasing the activity of CGI-69.
- 23. The method of claim 22, wherein said increasing activity comprises increasing the expression of CGI-69.
- 24. The method of claim 22, wherein said metabolic disorder is selected from the group consisting of obesity, tumors, cancers, viral infections and bacterial infections.
- 25. A method for determining whether a compound up-regulates or down-regulates expression of a *CGI-69* gene in a cell, comprising:
 - (a) contacting the cell with said compound; and
 - (b) detecting expression of the gene.
- 26. The method of claim 25, wherein mRNA encoding CGI-69 is detected.
- 27. The method of claim 25, wherin a CGI-69 polypeptide is detected.
- 28. The method of claim 25, wherin said composition is a cell.
- 29. A transgenic non-human animal, having a disrupted CGI-69 gene.
- 30. The transgenic non-human animal of claim 29, wherein the non-human animal is a mouse.

- 31. A transgenic non-human animal, comprising a transgene having at least 80% sequence identity to the sequence of SEQ ID NO:1 or a complement of said sequence.
- 32. A method of screening for a mutation in CGI-69 comprising comparing a nucleic acid sequence to the sequence of SEQ ID Nos:1 or 2.
- 33. A method of measuring CGI-69 agonist or antagonist activity of a compound comprising:
 - (a) contacting a composition comprising CGI-69 activity with the compound; and
 - (b) determining a change in the CGI-69 activity.
- 34. The method of claim 33, wherein the composition is a cell.